Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

VOL. VII. No. 17. AUGUST 18, 1910

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

HUXLEY'S EPIPHENOMENALISM: A CRITICISM AND AN APPRECIATION[1]

HUXLEY'S theory of the relation between mind and body receives little attention nowadays when parallelism and interactionism divide the field between themselves. It seems to be taken for granted by those who are unsympathetic with interactionism that parallelism is the only alternative, that Huxley's position is intelligible only as a step in the direction of parallelism, and that short of parallelism one may not stop when once this direction has been taken. It will be the attempt of this paper to show that while Huxley's theory is indefensible as it stands, it is capable of development into a view other than parallelism, and that this view is self-consistent and consistent with known facts. In my opinion, it is the most satisfactory working hypothesis at present available, and avoids the difficulties involved in interactionism and parallelism, but its apparent advantages over its rivals can not here be discussed. All I can do is, starting from Huxley's theory, to show what modification is necessary to arrive at this view, and why this modification is necessitated by the very logic of his position and made possible by a correct statement of facts an incorrect statement of which misled him into epiphenomenalism; and then I hope to remove some difficulties that may stand in the way of understanding the view thus developed.

To get Huxley's view before us exactly, I shall take the liberty of making rather long quotations from him. As his doctrine was an attempt to reconcile with the law of the conservation of energy the apparent fact that conscious processes[2] are effects of physical processes in the brain, let us begin with his statement of the relation of conscious processes to that law.

---

[1] A paper read at the meeting of the Western Philosophical Association at Iowa City, March 25, 1910. In view of the discussion that followed the reading, some passages have been rewritten for the sake of greater clearness.

[2] It is not necessary here to enter upon a discussion of Huxley's view of conscious processes or of how much he included under this term. Let it suffice to say that in general his doctrine of the relation between mind and body, with the modifications that I shall propose, is independent of any special view of the

"The doctrine of the conservation of energy which I have endeavored to illustrate is thus defined by the late Clerk Maxwell:

" 'The total energy of any body or system of bodies is a quantity which can neither be increased nor diminished by any mutual action of such bodies, though it may be transformed into any one of the forms of which energy is susceptible.' It follows that energy, like matter, is indestructible and ingenerable in nature. The phenomenal world, so far as it is material, expresses the evolution and involution of energy, its passage from the kinetic to the potential condition and back again. Wherever motion of matter takes place, that motion is effected at the expense of part of the total store of energy.

"Hence, as the phenomena exhibited by living beings, in so far as they are material, are all molar or molecular motions, these are included under the general law. A living body is a machine by which energy is transformed in the same sense as a steam-engine is so, and all its movements, molar and molecular, are to be accounted for by the energy which is supplied to it. The phenomena of consciousness which arise, along with certain transformations of energy, can not be interpolated in the series of these transformations, inasmuch as they are not motions to which the doctrine of the conservation of energy applies. And, for the same reason, they do not necessitate the using up of energy; a sensation has no mass and can not be conceived to be susceptible of movement. That a particular molecular motion does give rise to a state of consciousness is experimentally certain; but the how and the why of the process are just as inexplicable as in the case of the communication of kinetic energy by impact."[3]

Two things should be observed with regard to the conceptions that appear in this quotation. The one concerns the general conception of law and the other concerns the meaning of the particular law of causation. Scientific laws are for Huxley assumptions of order in the universe, borne out by experience. "All physical science starts from certain postulates. . . . The validity of these postulates is a problem of metaphysics; they are neither self-evident nor are they, strictly speaking, demonstrable. The justification of

---

nature of consciousness. All that the doctrine presupposes is that consciousness is not material. Huxley has a definition of matter which is given on page 60 of the work to be referred to in the next foot-note, but this definition again need not be accepted by one who holds to his general view of the relation between mind and body. All that is necessary is to conceive matter as occupying space and moving therein and existing in realistic and not idealistic fashion.

[3] *The Progress of Science*, in "Methods and Results," pp. 94–95 of the Macmillan edition, 1904.

their employment, as axioms of physical philosophy, lies in the circumstance that expectations logically based upon them are verified, or, at any rate, not contradicted, whenever they can be tested by experience.''[4] If Huxley is at times dogmatic, his dogmatism is only his resolute purpose to remain consistent with his postulates so long as ''expectations logically based upon them are verified, or at any rate, not contradicted'' by experience. His obstinate attempt to reconcile the appearance of consciousness in connection with physical changes in the brain with the law of the conservation of energy was not due to any conviction of the logical necessity of that law. His interpretation of the logical basis of that law was exactly the same as that given by Clerk Maxwell himself, who said: ''This doctrine, considered as a deduction [induction?] from observation and experiment can, of course, assert no more than that no instance of a non-conservative system has hitherto been discovered. As a scientific or science-producing doctrine, however, it is always acquiring additional credibility from the constantly increasing number of deductions which have been drawn from it, and which are found in all cases to be verified by experiment. . . . When once apprehended it furnishes to the physical inquirer a principle on which he may hang every known law relating to physical actions, and by which he may be put in the way to discover the relations of such actions in new branches of science.''[5] Huxley believes that the law is true, and he believes this because the assumption that it is true has enabled the scientist to discover more truth.

The second observation has to do with the meaning of causation as Huxley used this conception. ''Another postulate is the universality of the law of causation; that nothing happens without a cause (that is, a necessary precedent condition), and that the state of the physical universe, at any given moment, is the consequence of its state at any preceding moment.''[6] Again, in another work, he says:

---

[4] *Op. cit.*, pp. 60–61.

[5] "Matter and Motion," chapter V.

[6] *Op. cit.*, pp. 60–61. The only word that need give us pause in trying to understand this statement of his meaning of causation is the word "necessary." This pause is necessitated in view of the fact that elsewhere he "repudiates and anathematizes the intruder." "Fact I know; and Law I know; but what is this Necessity, save an empty shadow of my own mind's throwing?" ("On the Physical Basis of Life," *op. cit.*, p. 161.) It is evident to a careful reader that Huxley believes in necessity and disbelieves in Necessity. The former is only the synonym for invariability. The latter is a "most gratuitously invented bugbear," whose nature Huxley does not exactly define, although he writes of it as if it were a supposititious monster which, it is alleged, prevents men always from doing what they like; and of course being a man who had often experienced the satisfaction of doing what he liked, he was naturally inclined to believe this monster to be a myth.

"For that relation [of cause and effect] is nothing but an order of succession, which, so far as our experience goes, is invariable; and it is obvious that the nature of phenomena has nothing to do with their order. . . . The only meaning of the law of causation, in the physical world, is that it generalises universal experience of the order of that world."[7] Whatever one may think of Huxley's refusal to define causation as anything but an invariable order of succession, one at least may not deny him the right to use this definition of the term if he consistently abides by it. Now it is clear that if by causation be meant nothing but invariable order of succession, something else than invariable order of succession is not causation. Now the law of the conservation of energy formulates a relation which is something else than that of invariable succession. This relation is that of quantitative equivalence of energy among physical phenomena which are in the invariable order of succession. The law of conservation is not a deduction or corollary from the law of causation, but is the statement of a further relation between physical events, with which the law of causation is compatible, but which can not be logically inferred from that law. Again, inasmuch as the law of the conservation of energy is a law that is based on observed physical sequences and only on observed physical sequences, and is in its very terms applicable to physical sequences alone, the fact that there is an energetic equivalence between physical cause and physical effect does not preclude the possibility that always following *certain* physical events there are events that are not physical. If such prove on empirical evidence to be the case, the invariable non-physical sequent upon such a physical event does not invalidate the empirical law of the conservation of energy. The latter law may hold good of the physical members of the sequence, and if it does the presence of a further relation in addition to the energetic-conservation relation is simply an illustration of the fact with which we are familiar in other cases, the fact, namely, that the same term may stand in several relations, and that one relation does not always suffer modification from the presence of another relation.[8] A brain process may therefore have two effects, one a physical effect, exhibiting an equivalence of energy with its cause, and another a non-physical effect and, because non-physical, having no energetic relation to its cause. The absence of the energetic relation in the latter case does not necessarily carry with it the absence of the relation of invariable antecedence and consequence, that is, the absence of the causal relation as Huxley defines it. Assuming, therefore, the facts of the relation between brain states and later brain states, on the one hand, and the relation between brain states and later conscious processes, on the other, to be what Huxley thought they were, Huxley was perfectly justified in insisting that the conscious processes should not be "interpolated in the series of physical transformations." On the other hand, he was perfectly justified—on the same assumption—in asserting that the conscious processes are the effects of the brain changes. And he was justified, further, in indignantly repudiating the charge that such an assertion committed him to materialism. The recognition that the psychic is the effect of the physical commits no one to a materialistic interpretation of the psychic, unless he commits himself to the doctrine that physical causes can have *only* physical effects. Such a doctrine is at best an assumption, and no one who makes that assumption is justified in thrusting it upon others who prefer the assumption that "molecular changes in the brain are the causes of all the states of consciousness of brutes."[9] While it is true that no one has ever observed molecular changes in the brain immediately preceding conscious processes, we have very good indirect evidence that such changes do precede conscious processes, and in view of such evidence we have the right, in absence of empirical confutation, to assume that such sequences are invariable. And this justifiable assumption is nothing but the assumption of a causal connection between body and mind, when causal connection is defined as Huxley defines it. One may not choose to make this assumption, but in the present condition of our knowledge in this matter, one can not justify this refusal on the ground that any empirically ascertained facts preclude it.[10]

---

[7] "Hume," New York, 1879, p. 182. I take it that Huxley means, when he says that the nature of phenomena has nothing to do with their order, that one can not argue *a priori* from the former to the latter.

[8] For instance, the relation of equality between two twos is not impaired by the presence of further relations of likeness or unlikeness that may obtain among the four objects severally.

My conclusion, so far, is that Huxley was warranted in assuming that the psychic is the effect of physical changes in the brain, and in maintaining that this assumption does not prejudice the assumption of a quantitative equivalence of energy in the successive brain changes. But unfortunately Huxley was not satisfied with leaving matters here, nor did he draw the proper logical conclusion from these assumptions. He went on, in defiance of logic, to deny that the psychic can be the cause of brain changes.

That this is sheer inconsistency can best be brought out by using symbols to designate the physical and the psychic processes involved.

---

[9] "On the Hypothesis that Animals are Automata," *op. cit.*, pp. 239–40.

[10] It is not possible here to make good this statement by examining all the arguments for interactionism that are based on empirical grounds, hence this statement must be left in its apparent dogmaticalness.

Let us designate the physical processes by the first letters of the alphabet in capitals, and the psychic by the last letters in lower case. We have then the formula

$$\begin{tikzcd}
A \arrow[r] \arrow[dr] & B \arrow[r] \arrow[dr] & C \arrow[r] \arrow[dr] & D \arrow[r] & E \\
 & x & y & z &
\end{tikzcd}$$

where the arrows point from cause to effect, according to Huxley's assumption of the causal relations obtaining. Now if both B and x invariably follow A, and if both C and y invariably follow B, then C invariably follows x. x can not be the invariable accompaniment of B in following A without being the invariable antecedent of C which invariably follows B. To put it otherwise, C can not stand in the order of uniform succession to B without also standing in that same order to what is uniformly simultaneous with B. On Huxley's assumption, therefore, x is "a necessary precedent condition" of C; but by the same token it is the cause of C, in Huxley's phraseology. To borrow Huxley's own language we may say that if it is experimentally certain that a particular molecular motion does give rise to consciousness, it is just as certain that consciousness gives rise to the next following molecular motion; but the how and why of the process are just as inexplicable as in the case of the communication of kinetic energy by impact.[11] If we accept the laws of motion on empirical evidence and assume that in such laws of motion we discover a part of "the rational order which pervades the universe,"[12] on the same evidence we should accept psycho-physical laws, and regard them too as a revelation of the rational order of the universe.

Thus not only is x as well as B the cause of C, but also by the same reasoning is x as well as B the cause of y. In other words, Huxley's assumptions carried out consistently give us three distinct lines of causal connection in the complex series of physical and psychical events. There is the purely physical series of cause and effect; there is the purely psychical series; and there is the psycho-physical series. The first is expressible by our symbols thus: $A—B—C—D—E$, where the lines are lines of causal connection. The second is expressible thus: $x—y—z$. The third to be fully expressed must be written partly in chiastic fashion:

$$\begin{tikzcd}
A \arrow[dr, dash] & B \arrow[dr, dash] & C \arrow[dl, dash] \arrow[dr, dash] & D \arrow[dl, dash] & E \arrow[dl, dash] \\
 & x & y & z &
\end{tikzcd}$$

---

[11] This last reservation merely means that no amount of poring over any term taken in complete abstraction from the actual relations in which it appears will enable us to understand in what relations it appears.

[12] *Op. cit.*, p. 60. I presume that by rational order he means order which makes possible the verification of expectations logically based on the assumption of that order.

Each series is, on Huxley's assumptions logically carried out, a causal series; but not any one of them excludes the other. Each is an abstraction from the whole complex of series; but the abstraction is not a falsification; it does not have to be corrected, but merely to be supplemented by the other two series. The whole complex of series can be symbolized in this fashion:

$$\begin{tikzcd}
A \arrow[r, dash] \arrow[dr, dash] & B \arrow[r, dash] \arrow[dr, dash] & C \arrow[r, dash] \arrow[dr, dash] & D \arrow[r, dash] & E \arrow[dl, dash] \\
& x \arrow[r, dash] \arrow[ur, dash] & y \arrow[r, dash] \arrow[ur, dash] & z &
\end{tikzcd}$$

But the fact that y has a psychical cause is no evidence that x has one, any more than the fact that some brain states have psychic effects is a proof that all physical processes have psychic effects. It is simply a question of fact what events have what causes and what effects. According to the assumption of "the objective existence of a material world," the physical series extends forward and backward beyond the shorter psychical series. But when the psychic emerges its connection with the particular physical events which condition it, and which it conditions, respectively, is not a purely fortuitous connection. Its invariability of occurrence under these physical conditions, and the invariability of the occurrence of the following physical events upon the preceding psychic event, are, to use Huxley's phrase again, part of "the rational order which pervades the universe." The psychic, where it appears, is as integral a part of the universe as the physical. It is only physically epiphenomenalistic: that is, when we are considering *only* the physical connections, the psychic does not enter into account as an object of consideration. The epiphenomenality of the psychic is nothing but its *irrelevance to the task of the physicist,* which is the problem of tracing the purely physical connections. This irrelevance is not a symptom of an intrusion of the psychic into a universe where it does not belong, and where it stays only on sufferance. Belonging to that universe in which it is born, it has its lawful place and lawful connections, and more can not be said for the physical, except that the latter is more pervasive. It is only a metaphysics that recognizes the right of primogeniture, which can exclude mind from membership in the constitution of the universe.

In criticism of the above position it will probably be urged that x can not be the cause of C, because C could happen if B were given without x. The simplest reply to such a criticism is that it ignores the assumption of the view it criticizes. *If* we never have C without both B and x immediately preceding, what right have we to say that we can dispense with x and yet get C, because B would still remain? The only empirical way in which we can determine whether any antecedent is dispensable is to eliminate it and see what happens.

But if we can never experimentally eliminate one of the antecedents of an event, we have no empirical warrant for denying the causality of that event. The fact that certain other physical changes, such as the fall of a stone, can take place without consciousness is no proof that the specific brain change that immediately follows a specific volition could have occurred without that volition. It is true that according to the assumptions of physical science, given B, C follows, and this assumption is made without reference to the presence of x. But the fact that this assumption does not take into consideration the presence of x along with B does not force one, *when one does take account of* x, to say that x is dispensable. If one does take x into the reckoning, that is, if one transcends the purely physical view of the situation, then one should apply to x the same conception of causation[13] as is applied to B. One should not blow hot on an invariable physical antecedent and cold on an invariable psychical antecedent. However, the fact that x is thus to be recognized as a cause of C does not warrant one, on Huxley's assumption, in saying that the presence of x makes C different from what would have followed if B had been alone. For the assumptions under which he works preclude the possibility that B could be alone; inasmuch as he assumes that *invariably* following A are *both* B and x. One can not make such an assumption and while still clinging to it also assume that B can appear *without* x in sequence upon A. If we grant, on the other hand, that B could appear without x after A, then we must deny that x is the effect of A in Huxley's sense of the word effect; for then x would not be an invariable sequent upon A. To do otherwise would be like trying to answer the old puzzle: what would happen if an irresistible force were to act upon an immovable body? The answer of course is that the assumption of an irresistible force contradicts the assumption of an immovable body. In the same way it has been asked what would be the bearing upon its own truth of the supposed truth of the statement that all statements are false. The reply is that from an inconsistent statement it is difficult to see how consistent conclusions can consistently be drawn. So when one assumes that x always accompanies B and that both x and B always precede C, it is difficult to see how one can further assume that B without x is always followed by C. B can not always be accompanied by x, and also sometimes be by itself. The former assumption may be incorrect, but if it is correct the latter is precluded. Now as a matter of fact we have about as much evidence that the stimulation in a certain way of a normal optic nerve under certain brain conditions is always followed by a certain "conscious process" as we have for believing that it is also always followed by a definite change in brain conditions. It is hard, therefore, to see how, in our present state of knowledge, one can justify oneself on empirical grounds in denying the propriety of making the assumption that both x and B always follow upon A. If this assumption is made, then, I submit, one is logically bound to regard x as well as B as the cause of C; and, again I submit, one is logically bound to assume further that C never occurs without the prior occurrence of x as well as of B.

---

[13] This presupposes that by cause is meant an invariable antecedent condition. If cause is defined otherwise, then the question arises whether that conception is applicable to what is psychic, and it may be applied only if applicable. For instance, one may choose to define cause as an invariable *physical* antecedent, and thus by definition rule out the psychic as cause. But if this is done, one should also rule out the psychic as effect.

But, again, the assumption that x is an indispensable antecedent of C does not commit one to denying that all the energy of C is found in B, and that all the physical characteristics of C are physically accounted for by B. For by physically accounting for any event is only meant, on Huxley's assumptions, stating all the necessary antecedent *physical* conditions of that event. This can be done and must be done, if done at all, by completely ignoring everything antecedent that is *not* physical. When one turns to the consideration of the non-physical antecedents of the event, if it has any, one must refuse, because these antecedents are non-physical, to impute to them any physical character, such, for instance, as that they allow some of their energy[14] to pass over into their physical effect: not having energy themselves they can not take part in a transaction in which they could engage only if they had it.

It is now possible to indicate briefly the points in which this view,[15] now developed from Huxley's epiphenomenalism, differs from interactionism and from parallelism and also the points in which it agrees with them. It differs from interactionism in declining, consistently with its own assumptions, to say that B without x would be followed by something else than C; it thus declines not because B without x would still be followed by C, but because, on the assumptions made, B never appears without x. It agrees with interactionism in assuming that C would not have occurred without x. It differs, on the other hand, from parallelism in asserting a causal interrelation between the physical and the psychical where there is evidence that the psychical follows uniformly upon the physical, and

---

[14] I am using energy here in the sense in which Maxwell uses the term in his "Matter and Motion," not in the sense in which energy is frequently used of will when treated as a purely psychical fact. I am not denying the propriety of the latter use; I think, however, that if it is used in both senses, it is advisable to be distinctly aware of the ambiguity.

[15] If this view requires a name, I should suggest intercausalism as perhaps as appropriate as any.

vice versa; it does this because what it means by causation is invariably uniform sequence. It agrees with parallelism in declining to admit that any physical characteristics of *C* are not completely accounted for physically by *B,* and in declining to admit that a physical account needs to be revised and corrected by a psycho-physical account. Supplementation is not necessarily correction.

One thing further should be said in setting this view right against a possible criticism. The theory of causation adopted in this view, while it may be stated in purely Humian terms, is not necessarily so stated. On the contrary, it is possible to regard relations not as accidentally adventitious in the universe, but as constitutive of it just as much as terms are—just as constitutive of experience as relations are in Kantianism. But while Kantianism is not content with merely recognizing the constitutive character of relations, but proceeds to affirm that all constitutive relations are supplied by the synthetic unity of apperception, this view may regard relations as existing in their own right and not needing any transcendental support. This is the form of the view that appears to me the more tenable, and this seems to be the form of the view, so far as Huxley held it, which he at least at times did hold, as seems to be shown by his speaking of ''the rational order which pervades the universe.'' According to this view the psycho-physical connections and the psychological connections in the universe are just as ultimate and underivative as are the physical connections. The important point is not to assert dogmatically beyond the evidence that any form of connection, because it obtains somewhere, must obtain everywhere.[16]

Before closing this paper it remains to render Huxley a piece of justice that has been generally denied him. In his essay of 1874[17] he declined expressly to recognize the causality of ''states of consciousness.'' His critics have generally failed to state the reasons he gave for this denial. They have usually represented that his reason was the inconceivability of a causal relation in which consciousness is cause and a physical event is effect.[18] This is gross misrepresentation. Huxley did not dogmatize about material causa-

[16] Professor James's chapter, *The One and the Many,* in his "Pragmatism," is an eloquent protest against this kind of dogmatism.

[17] *On the Hypothesis that Animals are Automata,* reprinted in "Methods and Results."

[18] Professor James, "Principles of Psychology," Vol. I., p. 137, for instance, after quoting from Huxley among others to show what the automaton theory is, says: "But one has no right to pull the pall over the psychic half of the subject only, as the automatists do, and to say that *that* causation is unintelligible, whilst in the same breath one dogmatizes about *material* causation as if Hume, Kant, and Lotze had never been born."

tion, nor did he dogmatize about the impossibility of psychic causation. He assumed the former as a postulate; and he gave not a dogmatic reason, but an empirical reason for declining to assume the latter. "Is there any evidence that these states of consciousness may, conversely, cause those molecular changes which give rise to muscular motion? *I see no such evidence.* The frog walks, hops, swims, and goes through his gymnastic performances quite as well without consciousness, and consequently without volition, as with it. . . ."[19] This is obviously an incorrect statement of the facts, but it is not dogmatism. There is no hint here of an *impossibility* of psychic causation; all there is is a statement of an observer that he *finds no evidence* for such causation. We are at liberty to criticize the acuteness of his observation, not his "dogmatism." The excerebrated frog does *not* go through all his gymnastic performances quite so well "without his consciousness as with it." In fact, his consciousness is assumed to be absent because he is now brainless. If we say that he can get along without this assumed consciousness as well as with it, we should also say that he can get along as well without his brain as with it. This Huxley did not seem to have seen, and of course his reasoning here is very bad, and it is, I think, because of this fatal misstep that he failed, in this paper on animal automatism, to work out to its proper conclusion the theory which he had so brilliantly begun. Fortunately, however, he made amends five years later, but his critics have, whether through discretion or ignorance, neglected to mention and welcome his return from the error of his ways. Therefore I take the liberty of commending to their attention the tenth chapter of Huxley's little book on Hume, especially the first six pages of that chapter. There he says: "The only meaning of the law of causation, in the physical world, is, that it generalises universal experience of the order of that world; and if experience shows a similar order to obtain among states of consciousness, the law of causation will properly express that order. That such an order exists, however, is acknowledged by every sane man."[20] He proceeds a little later to quote with approval Hume's assertion: "Ambition, avarice, self-love, vanity, friendship, generosity, public spirit: these passions, mixed in various degrees, and distributed through society, have been, from the beginning of the world, and still are, the source of all the actions and enterprises which have ever been observed among mankind." After several rather long citations from Hume, Huxley asks: "But, if the necessary connexion of our acts with our ideas has always been acknowledged in practice, why the proclivity of mankind to deny it in words?'' He answers this question by again quoting from Hume, and the quotation is too long to reproduce here, but the gist of it is that the denial is due to a strong propensity to believe that causal connection means more than constant conjunction. ''But, being once convinced that we know nothing of causation of any kind, than merely the *constant conjunction* of objects, and the consequent *inference* of the mind from one to another, and finding that these two circumstances are universally allowed to have place in voluntary actions, we may be more easily led to own the same necessity common to all causes.''[21] Still further on in this same chapter Huxley says: ''If a man is found by the police busy with 'jemmy' and dark lantern at a jeweller's shop overnight, the magistrate before whom he is brought the next morning reasons *from those effects to their causes in the fellow's 'burglarious' ideas and volitions, with perfect confidence,* and punishes him accordingly. And it is quite clear that such a proceeding would be grossly unjust, if the links of the logical process were other than necessarily connected together.''[22] Huxley evidently shares this confidence with the magistrate, and goes so far as to say that the denial of this causal connection is as much a waste of time as would be the denial of a geometrical truth.

---

[19] *Op. cit.*, p. 240. Italics mine.

[20] "Hume" (New York edition, 1879), pp. 182–3.

These quotations from Huxley and from Huxley's quotations from Hume show that Huxley did not abide by his denial of causality to psychic events in relation to subsequent bodily actions. It is quite true that he never took up the task of showing how this subsequent concession is reconcilable with his early position, and he gave evidence that in 1892 he had returned to his earlier position.[23]

He never succeeded in reconciling a causal order which ''is acknowledged by every sane man'' with his epiphenomenalism. It has been the purpose of this paper to show that if epiphenomenalism is interpreted as the physical irrelevance of psychical phenomena, an irrelevance based on the purpose of physics to confine its attention to the merely physical, a reconciliation is feasible. Huxley himself furnished all the essential conceptions necessary to this reconciliation. He merely failed to see the logical relation to each other of these conceptions, and his failure was not due to a dogmatic preconception of the impossibility of thoroughly mutual causal relations between mind and body, but to inaccurate statement of empirical facts.

EVANDER BRADLEY MCGILVARY.

THE UNIVERSITY OF WISCONSIN.

---

[21] "Hume."

[22] "Hume," p. 190, italics mine.

[23] See his famous last foot-note in his definitive edition of the paper, *On the Physical Basis of Life* (*op. cit.*, p. 163): "Or, to speak more accurately, the physical state of which volition is the expression."